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Marshall Space Flight Center, Alabama 35812
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Manager of Public and Employee Communications: June E. Malone (acting)
Editor: Jenalane Rowe

The State of NASA's Marshall Space Flight Center, Key Programs and Budget to be Presented April 17 at Marshall 2014 Update

By Kenneth Kesner

The state of NASA's Marshall Space Flight Center and key programs such as the Space Launch System (SLS) will be discussed during the "Marshall 2014 Update" from 3:30-5 p.m. April 17 at the U.S. Space & Rocket Center's Davidson Center for Space Exploration.

Among the speakers will be

Marshall Center Director Patrick Scheuermann, Marshall Deputy Director Teresa Vanhooser, SLS Program Manager Todd May, Science & Technology Manager Daniel Schumacher, Chief Engineer Lisa Watson-Morgan, Deputy Chief Financial Officer Rhema Gordon and Office of Strategic Analysis & Communications Director Bobby

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Teams from Reno, Nev., and Puerto Rico Take Top Honors at First NASA Human Exploration Rover Challenge

After two solid days of heated competition, NASA declared the winners of the first NASA Human Exploration Rover Challenge, held April 11-12 at the U.S. Space & Rocket Center in Huntsville. Student racers from the Academy of Arts, Careers and Technology in Reno, Nev., claimed first place in the high school division; the University of Puerto Rico at Humacao Team 2 won the top prize in the college division.

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Posting the best course time overall, the racers from the Academy of Arts, Careers and Technology from Reno, Nev., won in the high school division with a posted time of 3 minutes, 37 seconds. (NASA/MSFC/Fred Deaton)

Marshall Center to Conduct Active Shooter Emergency Exercise April 17

By Kenneth Kesner

A full-scale active shooter emergency exercise will be conducted the morning of April 17 at NASA's Marshall Space Flight Center. The exercise will involve a mock shooter and victims; simulated emergency radio traffic, alerts and announcements; Marshall, Redstone Arsenal and area emergency responders and response teams; and other activities to test the center's emergency response and communications preparedness.

During the event, Emergency Notification System (ENS) announcements and other messages will be preceded by "EXERCISE." Employees are encouraged to listen to the complete ENS phone message and respond as required to reduce repeat calls.

The Marshall Center workforce should:

- Think about what you would do if an active shooter situation happened in your building or a nearby location.
- If you are in the area described in the announcement or you hear gunfire or screaming by the actors during the exercise, take precautionary measures as you would during an actual emergency

situation. Remember the active shooter training and decide your best course of action: RUN, HIDE or FIGHT.

-- If you are not in the immediate area noted during the exercise announcements, implement "shelter-in-place" actions and take precautionary measures as you would during an actual emergency, being sure to keep clear of windows and exterior doors. DO NOT call 911 to find out what's going on. Also stay clear of the affected area or building involved in the exercise and avoid going outside until the "all clear" message is given.

-- Make sure personal contact information is updated in id.nasa.gov or Employee Express.

-- Let family members know about the April 17 active shooter exercise and the ENS test.

The active shooter exercise is part of the Marshall Center's ongoing commitment to protecting employees – its most valuable assets.

Kesner, an ASRC Federal/Analytical Services employee, supports the Office of Strategic Analysis & Communications.

Avionics System for SLS Boosters Gets 'Boost' of Its Own on Path to Space

By Megan Davidson

The avionics that will guide NASA's Space Launch System (SLS) boosters on the rocket's trip to deep space missions will get a big "boost" toward being ready for flight through an extensive test series now being conducted at ATK's Avionics Lab in Clearfield, Utah.

The avionics system is responsible for igniting, steering and jettison of the two, five-segment solid rocket boosters for the SLS. The boosters used during the first two launches of SLS will be the world's largest at 154 feet long and 12 feet in diameter.



Artist concept of the SLS solid rocket boosters firing their separation rockets and pushing away from the core stage, which continues toward space with the Orion spacecraft. (NASA)

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Rover Challenge *Continued from page 1*

They raced to victory against 70 high school, college and university teams from 19 states, Puerto Rico, Germany, India, Mexico and Russia. All told, more than 500 students -- drivers, engineers and mechanics, plus team advisors and "cheering sections" -- took part in the competition.

The winning teams posted the fastest vehicle assembly and race times in their divisions, with the fewest on-course penalties. The Reno team from the Academy of Arts, Careers and Technology finished the half-mile course in 3 minutes, 37 seconds. The University of

Puerto Rico at Humacao Team 2 finished in 4 minutes, 9 seconds. In addition to the winning trophy, first-place teams received a cash prize of \$3,000, courtesy of The Boeing Co., of Huntsville.

Finishing in second place in the high school division was Team 2 from the Vocational High School Teodoro Aguilar Mora in Yabucoa, Puerto Rico. In third place was the International Space Education Institute team from Moscow, Russia. Southern Illinois University Carbondale Team 2 won second place in the college division and Team 1 from the school finished in third place.

See Rover Challenge on page 4

The NASA Human Exploration Rover Challenge: Additional Awards and Prizes

Neil Armstrong Best Design Award (for the best technical approach to solve the engineering problem of navigating the extraterrestrial terrain of the course. The award honors the memory of Apollo 11 astronaut Armstrong, who became the first man on the moon during that historic 1969 mission, and who died in 2012): Academy of Arts, Careers and Technology in Reno, Nev.; Middle Tennessee State University in Murfreesboro - Team 2

Technology Challenge Award (for the team which best addresses the 2014 unique "wheel technology challenge," designing an innovative mobility system to aid navigation over the course): Central Connecticut State University in New Britain - Team 1

Featherweight Award (for the lightest rover on the track): Academia Menonita Summit Hills in San Juan, Puerto Rico; University of Puerto Rico in Humacao - Team 2

AIAA Telemetry/Electronics Award (for the most innovative onboard data-gathering and delivery system): Tecnológico de Monterrey Campus Cuernavaca from Xochitpec, Mexico - Team 1

Frank Joe Sexton Memorial Pit Crew Award (for ingenuity and persistence in overcoming problems during the race. Sexton, a NASA welder who mentored numerous welders and engineers among the Marshall workforce, worked on the original lunar rover and numerous

other space vehicles until his death in 2000): Parish Episcopal School in Dallas; Ohio State University in Columbus

Crash and Burn Award (for enduring and recovering from the worst vehicle breakdown): Rhode Island School of Design in Providence

Spirit Award (for overall team energy, enthusiasm and camaraderie as voted on by other teams): Pana High School in Pana, Ill.

Jesco Von Puttkamer International Team Award (for the fastest team hailing from outside the United States. The late, German-born Von Puttkamer worked at Marshall from 1962-1974, supporting the Apollo moon missions and the Skylab and Space Shuttle programs. He was instrumental in introducing international teams to NASA student racing in the early 2000s): International Space Education Institute - Team Russia from Moscow; International Space Education Institute - Team Germany from Leipzig

Best Report Award (technical documentation of the equipment and procedures used in design, build, test and the results obtained): University of Puerto Rico in Mayaguez

System Safety Award (for the team exemplifying best safety practices): SVKM NMIMS Mukesh Patel School of Technology in Mumbai, India

Marshall 2014 Update *Continued from page 1*

Watkins.

Topics to be discussed will include Marshall's economic impact; the fiscal year 2015 budget; improvements to Marshall buildings and other facilities; support for the International Space Station and a variety of science programs; and the importance of science, technology, engineering and math education -- the STEM fields -- from kindergarten through college to prepare the next generations of scientists and engineers.

The theme for this year's event is "Together We

Make Bold Things Happen." Exhibits highlighting Marshall's technical capabilities, SLS, Advanced Manufacturing, Technology Demonstration Missions and more will be on display for elected officials, community and business leaders and other invited guests.

See next week's edition of The Marshall Star for more from the Marshall 2014 Update.

Kesner, an ASRC Federal/Analytical Services employee, supports the Office of Strategic Analysis & Communications.

Rover Challenge *Continued from page 3*

Organized by NASA's Marshall Space Flight Center and building on two decades of competitive student innovation in the NASA Great Moonbuggy Race (held in the "Rocket City" from 1994-2013), the new event challenges students to design, build and race lightweight, human-powered roving vehicles, solving technical problems along the way just like NASA engineers must do.

Those NASA engineers are paying attention: Students' most innovative vehicle and hardware designs could help inform NASA's own development of rovers and other space transportation systems for future exploration missions across the solar system.

Just as importantly, the experience is designed to provide the future workforce the opportunity to realize those new missions, inspiring students to pursue careers in the technical "STEM" fields -- science, technology, engineering and mathematics -- so crucial to the agency's endeavors.

The NASA Human Exploration Rover Challenge is sponsored by the Human Exploration and Operations Mission Directorate at NASA Headquarters and organized by the Marshall Center's Academic Affairs Office. Major corporate sponsors for the race are The Boeing Co., Lockheed Martin Corp., Aerojet Rocketdyne, Jacobs Engineering ESSSA Group, and Northrop Grumman Corp., all with operations in Huntsville.

Full replays of the race will be available in coming days on the [Marshall Center's official UStream site](#), where the



Team 2 of the University of Puerto Rico at Humacao bested all other teams in the college division with a course time of 4 minutes, 9 seconds. (NASA/MSFC/Fred Deaton)

Marshall Center media personnel and television crew provided continuous, streaming coverage of the event.

For more information about the race, visit [here](#).

For images of every team over the course of the weekend, visit the Marshall Center's online [Flickr gallery](#), [Facebook page](#), or [Twitter account](#).

For information about other NASA education programs, visit [here](#).

SLS Avionics *Continued from page 2*

The booster avionics system -- including hardware, software and ground test systems -- is being integrated in a complete, forward skirt ring. The avionics testing, which will be completed this summer, will prove the system is ready to enter the qualification phase leading to SLS's first flight in 2017.

"Our team has a complete set of hardware built for the boosters, and we will test all the components -- from booster ignition through separation -- to make sure the hardware is functioning as designed," said Eric Corder, avionics system manager at NASA's Marshall Space Flight Center.

That testing will be done during two-minute flight simulations, with a booster test set mimicking the SLS flight computer. Avionics and the flight computer will be housed in the SLS core stage. When completed, the core stage will be more than 200 feet tall and store cryogenic liquid hydrogen and liquid oxygen that will feed the vehicle's RS-25 engines.

"Avionics is one of the most critical systems for human spaceflight," said Kent Rominger, a former astronaut who is now vice president of business development for ATK's Space Launch division. "Stressing the system beyond what it will see during flight affords us an opportunity to learn about system interactions and associated outcomes. That is exactly what is being accomplished by the team and our lab."

Once the SLS avionics booster testing is complete, the system and associated test equipment will be shipped to the Marshall Center. The booster avionics system will be joined with the SLS core stage avionics system at Marshall's System Integration Test Facility. Flight simulations will be performed to test and analyze SLS launch, flight and staging -- preparing for flight system certification in 2015.

Marshall manages the SLS Program for the agency. The booster avionics system was designed by NASA; ATK, prime contractor for the SLS boosters; and L-3 Cincinnati Electronics of Mason, Ohio.

As the SLS evolves, it will provide an unprecedented lift capability of 130 metric tons (143 tons) to enable



Eric Corder, right, avionics system manager at the Marshall Center, talks about NASA's SLS booster avionics system at ATK's Clearfield, Utah, lab. The avionics system is responsible for igniting, steering and jettison of the two, five-segment solid rocket boosters for the SLS. (ATK)

missions even farther into our solar system to places like Mars.

Davidson, an ASRC Federal/Analytical Services employee, supports the Office of Strategic Analysis & Communications.

Marshall Center Deputy Director Teresa Vanhooser Challenges the Definition of Traditional Mentorship

By Jena Rowe

John F. Kennedy once said, “Leadership and learning are indispensable to each other.” Seizing an opportunity to learn from a young Marshall engineer, NASA Marshall Space Flight Center Deputy Director Teresa Vanhooser has gained a mentor.

Recently, Vanhooser spent an hour in physicist Jessica Gaskin’s office learning about the work she is doing as a part of the X-ray astronomy group in the Science and Space Technology Projects Office. “I love doing things like this,” said Vanhooser. “I not only learn about new and emerging technologies and skills, but I also learn about myself and others.”

During their time together, Gaskin provided Vanhooser some perspective about what Marshall scientists do on a daily basis, as well as the responsibilities of scientists to reach out to the science community, establish relationships and report work in peer-reviewed publications and at conferences.

A young professional mentoring a senior leader goes against the grain of what is traditionally thought of as mentoring. Yet, the concept known as “reverse mentoring” -- in which experienced workers or executives hone skills or acquire fresh ones from newer, often younger, employees -- is on the rise.

However, for Vanhooser and Gaskin it was an opportunity to learn from one another. Vanhooser “actively listened to my concerns regarding center operations and small science efforts,” said Gaskin. “We even discussed a potential program to help facilitate science and engineering relationships at the center.”

Although Vanhooser was technically there to learn, she encouraged Gaskin in her efforts to establish relationships in the science community. “You’ve built those relationships,” said Vanhooser. “Don’t sell yourself short. Those relationships help strengthen Marshall collaborations with industry partners and open doors for new opportunities.”

Many people have the misconception that leaders are the only ones who can teach or mentor. Gaskin and Vanhooser are here to challenge that traditional thinking. Their time together proves that mentoring is more than seasoned professionals molding the minds of young professionals to the way things have always been. Mentoring is learning. Anyone can mentor or be mentored as long as one is willing to learn from another.

Rowe, an ASRC Federal/Analytical Services employee and Marshall Star editor, supports the Office of Strategic Analysis & Communications.

Marshall Center Director Cheers on Athletes Competing in the Huntsville Special Olympics

NASA Marshall Space Flight Center Director Patrick Scheuermann, second from right, and Nadra Hatchett, right, aerospace engineer who recently completed a management internship in the Office of the Center Director, cheer on contending athletes at the Huntsville Special Olympics on April 9. Leading the race is Ajonnie Williams, son of Veronica Williams of the Training and Incentives Office. Many Marshall Center team members volunteered at the event to escort the athletes to various sporting events as a part of the Combined Federal Campaign. (NASA/MSFC/Emmett Given)



NASA Celebrates Earth Day with 'Global Selfie'

For the first time in more than a decade, five NASA Earth-observing missions will be launched into space in a single year. To celebrate this milestone, NASA is inviting people all around the world to step outside on Earth Day, April 22, take a "selfie," and share it with the world on social media.

Designed to encourage environmental awareness and recognize the agency's ongoing work to protect our home planet, NASA's "Global Selfie" event asks people everywhere to take a picture of themselves in their local environment.

On Earth Day, NASA will monitor photos posted to Twitter, Instagram, Facebook, Google+ and Flickr. Photos posted to Twitter, Instagram or Google+ using the hashtag #GlobalSelfie, or to the #GlobalSelfie Facebook event page and the #GlobalSelfie Flickr group will be used to create a crowd-sourced mosaic image of Earth -- a new "Blue Marble" built bit-by-bit with #GlobalSelfie photos.

NASA's 17 Earth science missions now in orbit help scientists piece together a detailed global selfie of our planet day after day. Insights from these space-based views help answer some of the critical challenges facing our planet today and in the future: climate change, sea level rise, freshwater resources



Marshall Center Earth scientists Patrick Gatlin and Timothy Lang kick off the selfie campaign in front of a poster about the Global Precipitation Mission, one of NASA's Earth-observing missions that was launched in February. #Earthrightnow (NASA/MSFC/Gatlin and Lang)

and extreme weather events. NASA Earth research also yields many down-to-Earth benefits, such as improved environmental prediction and natural hazard and climate change preparedness.

For more information on getting involved in the #GlobalSelfie Earth Day event, visit [here](#).

For more information about NASA's Earth science activities in 2014, visit [here](#).

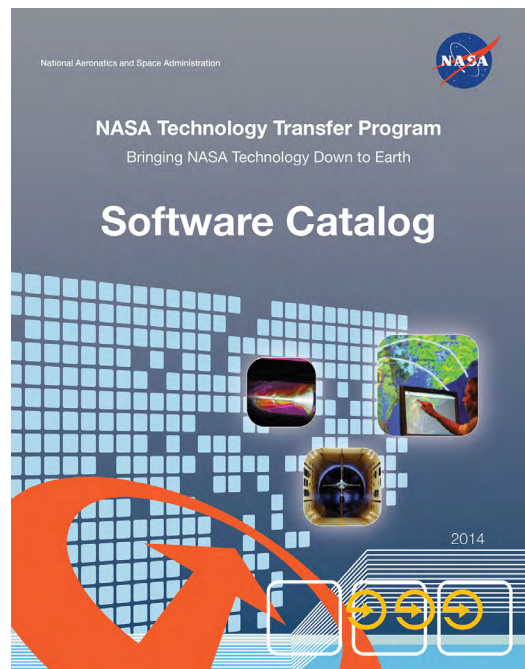
New Catalog Brings NASA Software Down to Earth

From NASA HQ release

NASA is making available to the public, at no cost, more than 1,000 codes with its release of a new online software catalog on April 10.

Organized into 15 broad categories, the new catalog offers a wide variety of applications for use by industry, academia, other government agencies and the general public.

"Software is an increasingly important element of the agency's intellectual asset portfolio, making up about a third of our reported inventions every year," said Jim Adams, NASA's deputy chief technologist. "We are excited to be able to make that software widely available to the public with the release of our new software catalog."



See Software Catalog on page 8

The technologies featured in the software catalog cover project management systems, design tools, data handling and image processing, as well as solutions for life support functions, aeronautics, structural analysis and robotic and autonomous systems. The codes represent NASA's best solutions to a wide array of complex mission requirements.

Each NASA code has been evaluated for access restrictions and designated for a specific type of release, ranging from codes that are open to all U.S. citizens to codes that are restricted to use by other federal agencies.

"This is the first time the list of all the agency's software is accessible in one place and sorted into categories," said Danny Garcia, chair, NASA Software Release Authority Working Group. "Our group led the compilation of the software catalog for the agency, editing 1,000 code descriptions from 10 centers written by many separate authors, so that the catalog will look uniform and be as user-friendly as possible. Future versions of the catalog will be

auto-generated by the NASA Technology Transfer System database when someone clicks on the link at the website and will always include the latest codes available."

"NASA is committed to the principles of open government," Adams said. "By making NASA resources more accessible and usable by the public, we are encouraging innovation and entrepreneurship. Our Technology Transfer Program is an important part of bringing the benefit of space exploration back to Earth for the benefit of all people."

NASA's Technology Transfer Program, managed by the Office of the Chief Technologist at NASA Headquarters, ensures technologies developed for exploration and discovery missions are broadly available to the public.

To access the software catalog, and for more information on NASA's Tech Transfer program, visit [here](#).